Information Warfare...From the Sea

Integrating Information Operations and the Marine Corps Planning Process

Submitted to
Commander David Mee
and Professor Eugene Grayson
at the
Marine Corps Command and Staff College
Quantico, Virginia

Major Douglas I. Feiring United States Marine Corps

March 30, 2001

Subject: Information Warfare...From the Sea: Integrating Information Operations and the Marine Corps Planning Process

Problem Although the Marine Corp's current method of planning and employing Information Operations (IO) seeks to integrate its various elements, improvements must be made for this emerging concept to be a truly effective force multiplier.

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burder for this collection of information is estibated to average 1 and reviewing this collection of information. Send comments regarding this burde Headquarters Services, Directorate for Information Operations and Reports (0704 law, no person shall be subject to any penalty for failing to comply with a collection.	n estimate or any other aspect of this collection -0188), 1215 Jefferson Davis Highway, Suite 12	of information, inc 204, Arlington, VA	luding suggestions for reducing 22202-4302. Respondents sho	g this burder to Department of Defense, Washington uld be aware that notwithstanding any other provision of	
1. REPORT DATE (DD-MM-YYYY) 2 30-03-2001	. REPORT TYPE			COVERED (FROM - TO) to xx-xx-2001	
4. TITLE AND SUBTITLE Information WarfareFrom the Sea: Integrating Information Operations and the Marine Corps Planning Process			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
Unclassified			SC. TROOTE HAT I	SEEDINET THE MEETING	
6. AUTHOR(S) Feiring, Douglas I.;			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT	NUMBER	
7. PERFORMING ORGANIZATION NAME AND ADDRESS Booz Allen & Hamilton 8283 Greensboro Drive McLean, VA22102			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME AND ADDRESS			10. SPONSOR/MONITOR'S ACRONYM(S)		
United States Marine Corps	IVIE TIL VE TIEBILESS		11. SPONSOR/MONITOR'S REPORT		
,			NUMBER(S)	IOMTORS REFORT	
12. DISTRIBUTION/AVAILABILITY STATEM APUBLIC RELEASE ,	/IEN I				
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
Although the Marine Corp?s current method of p improvements must be made for this emerging co				to integrate its various elements,	
15. SUBJECT TERMS					
IATAC COLLECTION; information warfare; inf	formation operations				
16. SECURITY CLASSIFICATION OF:	17. LIMITATION 1 OF ABSTRACT N Public Release C	8. IUMBER OF PAGES 2	19. NAME OF R Fenster, Lynn lfenster@dtic.mi	ESPONSIBLE PERSON	
a. REPORT b. ABSTRACT c. THIS PAC Unclassified Unclassified Unclassified			19b. TELEPHONE NUMBER International Area Code Area Code Telephone Number 703767-9007 DSN 427-9007		
				Standard Form 298 (Rev. 8-98) Prescribed by ANSI Std Z39.18	

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 074-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE 3/30/2001	3. REPORT TYPE AND DATES COVERED Report 3/30/2001			
4. TITLE AND SUBTITLE	3/30/2001		5. FUNDING NU	IMPEDE	
		b. FUNDING NU	INIDERS		
Information WarfareFrom the Sea: Integrating Information Operations and the Marine Corps Planning Process					
operations and the har	The corps riaming rio				
6. AUTHOR(S)					
Feiring, Major Douglas	. 1.				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)		8	8. PERFORMING ORGANIZATION		
7.1 Etti Ottiliito OttoAttiEATIOTTIAIIE(O) AND ADDITEO(EO)			REPORT NUMBER		
Booz Allen & Hamilton					
8283 Greensboro Drive					
McLean, VA 22102					
9. SPONSORING / MONITORING AG	GENCY NAME(S) AND ADDRESS(ES)	1	10. SPONSORING / MONITORING		
			AGENCY RE	PORT NUMBER	
United States Marine C	crps				
11. SUPPLEMENTARY NOTES					
420 DISTRIBUTION / AVAIL ADILIT	V CTATEMENT			12b. DISTRIBUTION CODE	
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; Distribution unlimited				I IZU. DISTRIBUTION CODE	
	_	limited			
	_	limited			
	_	limited		Α	
	_	limited			
	elease; Distribution un	limited			
Approved for public re	elease; Distribution un			A	
Approved for public re	elease; Distribution un		loying In:	A	
Approved for public real and a second	ords) orp's current method of	planning and emp		A formation Operations	
Approved for public real and a second	elease; Distribution un	planning and emp		A formation Operations	
Approved for public real and a second of the Marine Co. (IO) seeks to integrate its concept to be a truly	ords) orp's current method of a various elements, imp	planning and emp		A formation Operations	
Approved for public real and a second	ords) orp's current method of a various elements, imp	planning and emp		A formation Operations	
Approved for public real and a second of the Marine Co. (IO) seeks to integrate its concept to be a truly	ords) orp's current method of a various elements, imp	planning and emp		A formation Operations	
Approved for public real and a second of the Marine Co. (IO) seeks to integrate its concept to be a truly	ords) orp's current method of a various elements, imp	planning and emp		A formation Operations	
Approved for public real and a second of the Marine Co. (IO) seeks to integrate its concept to be a truly	ords) orp's current method of a various elements, imp	planning and emp		A formation Operations	
Approved for public real and a second of the Marine Co. (IO) seeks to integrate its concept to be a truly	ords) orp's current method of a various elements, imp	planning and emp		A formation Operations	
Approved for public real and a second of the Marine Co. (IO) seeks to integrate its concept to be a truly	ords) orp's current method of a various elements, imp	planning and emp		A formation Operations	
13. ABSTRACT (Maximum 200 Wood Although the Marine Co (IO) seeks to integrate its concept to be a truly effective force multip	ords) orp's current method of a various elements, imposition.	planning and empirovements must be	made for	A formation Operations	
13. ABSTRACT (Maximum 200 Wood Although the Marine Co (IO) seeks to integrate its concept to be a truly effective force multip	ords) orp's current method of a various elements, imp	planning and empirovements must be	made for	formation Operations this emerging 15. NUMBER OF PAGES	
13. ABSTRACT (Maximum 200 Wood Although the Marine Co (IO) seeks to integrate its concept to be a truly effective force multip	ords) orp's current method of a various elements, imposition.	planning and empirovements must be	made for	A formation Operations this emerging	
13. ABSTRACT (Maximum 200 Wood Although the Marine Co (IO) seeks to integrate its concept to be a truly effective force multip	ords) orp's current method of a various elements, imposition.	planning and empirovements must be	made for	formation Operations this emerging 15. NUMBER OF PAGES	
13. ABSTRACT (Maximum 200 Wood Although the Marine Co (IO) seeks to integrate its concept to be a truly effective force multip	ords) orp's current method of a various elements, imposition.	planning and empirovements must be	made for	formation Operations this emerging 15. NUMBER OF PAGES	
13. ABSTRACT (Maximum 200 Wood Although the Marine Co (IO) seeks to integrate its concept to be a truly effective force multip	ords) orp's current method of a various elements, imposition.	planning and empirovements must be	made for	formation Operations this emerging 15. NUMBER OF PAGES	
13. ABSTRACT (Maximum 200 Wood Although the Marine Co (IO) seeks to integrate its concept to be a truly effective force multiput force force multiput force force multiput force force force multiput force	ords) orp's current method of various elements, important in the control of the	planning and empirovements must be	made for	formation Operations this emerging 15. NUMBER OF PAGES 11 16. PRICE CODE	
13. ABSTRACT (Maximum 200 Wood Although the Marine Co (IO) seeks to integrate its concept to be a truly effective force multiput force force multiput force force force multiput force for	ords) orp's current method of various elements, important in warfare, information warfare, i	planning and empirovements must be mation operations	made for	formation Operations this emerging 15. NUMBER OF PAGES 11 16. PRICE CODE	

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89) Prescribed by ANSI Std. Z39-18 298-102

Background: IO integrates operations security, military deception, electronic warfare, psychological operations, physical destruction, and computer network attack in order to attack enemy information and information systems while protecting friendly information and information systems. While these elements produced measurable effects when performed independently in the past, amphibious forces can maximize combat power through their synergistic application. Properly integrated IO allows the amphibious force commander to shape the enemy's estimate of the situation, thus reducing the opponent's ability to make correct and timely decisions. IO acts as a force enhancer pressuring the enemy into a reactive mode by slowing his decision cycle. It also functions to maintain the tempo of the friendly commander's decision cycle.

Discussion: The current method of planning and integrating IO is through the ad hoc IO cell. Representatives from the various disciplines comprising the elements of IO make up this temporary working group. The IO officer, who is subordinate to the G-3/S-3, leads the cell. While an important tool for integration and planning, the use of the IO cell alone gives the impression that Information Operations are part-time or secondary. This limits its effectiveness. Much like maneuver warfare, the staff must adopt a "mind set" and incorporate IO in all aspects of the plan. The commander must have a vehicle to give IO the emphasis it requires.

The Marine Corps Planning Process (MCPP) currently specifies three concepts: Maneuver, Fires and Support. These concepts are normally included in the concept of ops and sometimes issued with the commander's planning guidance. They serve to integrate various warfighting functions and activities within a logical framework

Recommendation: IO should be included in MCPP as a concept. This would not only accentuate the significance of IO, it would also create effective guidance for coordinating IO activities across the amphibious force's warfighting functions.

Prepared by: Major Douglas I. Feiring Conference Group 11

"...We are going to cut the head off, then we're going to kill it." General Colin Powell

We live in the information age. More and more of the world's economic, industrial, media, government, and military infrastructures are reliant on information systems. The world's information dependency has created vulnerabilities which adversaries attempt to exploit in support of their national interests. This struggle for information superiority is known as information warfare (IW). Information Operations (IO) is the military

application of IW. Offensive IO allows military commanders "to realize the practical effects of IW on the battlefield".[1] It acts as a force multiplier by integrating several otherwise separate warfighting functions within the concept of operations. Information Operations "affect the actions of combatants at all levels, in that it demands coordination in the use of information and precision of action—to an extent never before expected or possible in warfare."[2] Although the Marine Corps' current method of planning and employing IO seeks to integrate its various elements, improvements must be made for this emerging discipline to be a truly effective force multiplier.

INTRODUCTION TO INFORMATION OPERATIONS

Joint Publication 3-13, Joint Doctrine for Information Operations, provides the following definition:

Information Operations are actions taken to affect enemy information and information systems while defending friendly information and information systems. IO requires the close, continuous integration of offensive and defensive capabilities and activities, as well as effective design, integration, and interaction of many capabilities and related activities. Major capabilities to conduct IO include, but are not limited to, [operations security (OPSEC)], [psychological operations (PSYOPS)], military deception, [electronic warfare (EW)], and physical attack/destruction, and could include [computer network attack (CNA)].[3]

Properly integrated, offensive IO allows the Amphibious Force commander to shape the enemy's estimate of the situation, reducing the enemy's ability to make correct and timely decisions while preserving his ability to do the same. It helps the commander to achieve surprise, protect friendly troops, gain and maintain the initiative, increase his freedom of maneuver, cut off enemy units from their leadership, and force the enemy to fight at a disadvantage. [4] "IO is inherently suited to expeditionary operations due to its lethal and non-lethal aspects, its ability to project force or influence, and its ability to provide a tailored response to a specific mission or crisis environment." [5] IO's effects parallel and complement those of maneuver warfare. Each seeks to force the enemy into a reactive mode by slowing his decision cycle. IO enhances maneuver warfare by seeking to protect and maintain the friendly commander's decision cycle. "A carefully structured IO plan preserves [Marine Air

Ground Task Force (MAGTF)] resources and may greatly assist the MAGTF in synchronizing the activities of a wide variety of agencies with those of the MAGTF."[6]

With the exception of CNA, it is readily apparent that IO does not introduce any new warfighting functions. Four of the elements: PSYOP, OPSEC, military deception, and physical destruction are as old as warfare itself. EW dates back to the first uses of the telegraph. What is new is their synergistic employment toward a common goal. "Each of the elements can produce measurable effects if performed independently; however, combat power is maximized through the synergistic application of all ... elements." [7]

In the past, commanders employed the various IO tools "without a holistic vision of the complementary effects that one component had for another." [8] Although military planners employed each warfighting function effectively as means towards different ends, they were unaware of and unable to reap the force multiplying benefits provided by their integrated use. Contrasting their use in two recent U.S. military expeditions will demonstrate the value of using well-integrated IO elements in an amphibious operation.

INFORMATION OPERATIONS IN URGENT FURY

An example of a conflict where commanders employed the elements of IO, but their integration and a unifying concept received no emphasis was the U.S. invasion of Grenada, Operation Urgent Fury, in October 1983. During the operation's planning phase, leaders employed stringent OPSEC measures at the expense of most other considerations. Tight security prevented many important joint planners, including several flag officers, from learning about and attending critical planning sessions. This hindered coordination and ultimately disrupted synchronization of the assault.[9] Urgent Fury's leadership did not favorably consider any preparatory psychological operations that may have softened initial resistance. They felt the potential for surprise was paramount, therefore strict OPSEC measures were necessary and outweighed any possible PSYOP benefit. To be truly effective, the OPSEC plan should have been integrated with a deception plan. Urgent Fury's only

deception plan was the alert order issued under the pretense of a major exercise. Ultimately, press reports and threats from neighboring Caribbean governments nullified many of the desired OPSEC effects, and gave the island's defenders a two day warning of the impending invasion.

Urgent Fury's planners sought to disrupt the enemy's cohesiveness by targeting critical Command and Control (C2) nodes of the defending People's Republic Army (PRA) for physical destruction. Unfortunately, intelligence did not adequately support this goal and strike aircraft bombed the wrong facilities. On the second day, intelligence sources finally identified Fort Frederick as the command center of the island's defenses. Coordinated defenses ceased after air strikes destroyed this node. All that remained was sporadic, isolated resistance.

The one occasion of productive, if unintentional, IO integration produced impressive results. Early in the assault, naval gunfire destroyed the island's radio transmitter. This effectively eliminated the PRA's ability to mobilize Grenada's militia. PSYOP teams quickly filled Grenada's empty airwaves. Their PSYOP messages motivated the local populace to cooperate with the Americans, who, according to the broadcasts, had come to end the years of chaos caused by the People's Revolutionary Government. Other messages encouraged the PRA to surrender or face their inevitable defeat by the overwhelming U.S. force. Transmissions in Spanish informed the Cuban forces on Grenada that they were safe from U.S. aggression unless they attacked the invasion force. With the local radio transmitter destroyed, the defending forces were unable to counter these productive PSYOP messages.

Urgent Fury was a success. Elements of IO employed were successful as means to their own ends. Integration of these complementary warfighting functions under a unifying concept probably would have had a profound impact on the operation, shortening the time required to achieve objectives and saving lives on both sides of the conflict. If U.S. forces had destroyed the enemy headquarters just before the assault, initial resistance may have been sporadic and uncoordinated. If planners had integrated OPSEC with pre-invasion

PSYOPs or deception, opposition to the forced entry may have been lighter. Urgent Fury's only effective integration of IO elements, physical destruction and PSYOP, yielded impressive results. Yet this resulted more from coincidence than from integrated planning by the JTF--there were no PSYOP planners on the staff. [10] Leaders of the Grenada invasion did not exploit the force multiplying benefits of integrating IO with the concept of operations. Eight years later, Gulf War planners did so with spectacular success.

INFORMATION OPERATIONS IN DESERT STORM

Operations Desert Shield and Desert Storm were in response to Iraq's invasion of Kuwait on 2 August 1990 and indications of continued Iraqi aggression. Central Command (CENTCOM) forces deployed to the Persian Gulf region to defend Saudi Arabia from invasion by Saddam Hussein's forces and to expel them from Kuwait. CENTCOM planners recognized the effectiveness of integrated IO as they developed the blueprint to drive the Iraqi forces from Kuwait.

Joint Publication 3-13.1 relates that, "During planning for Desert Storm, leadership recognized that Iraq's command and control was a critical vulnerability whose destruction could enable victory with minimal friendly loss."[11] IO objectives were emphasized from the highest levels. Topping the Secretary of Defense's guidance outlining the military objectives for the operation was, "Neutralize the Iraqi command authority's ability to direct military operations."[12] Actions like that of the Joint Force Air Component Commander (JFACC) demonstrate that planned integration of IO elements accomplished this objective--and more.

The JFACC's use of integrated IO greatly enhanced the success of the 16 January 1991 air offensive.

OPSEC planners created a story of heightened alert for a possible Iraqi ground attack to cover pre-assault arrangements such as mission planning, crew rest, and preparing of aircraft and ordinance. Military deception operations supporting the first night's air raids started many weeks earlier. Frequent evening sorties developed complacency in Iraqi air defense officers by conditioning them to see heavy concentrations of Coalition aircraft at

night. Physical destruction targeted critical Iraqi C2 nodes. The *Joint Command and Control Warfare Staff*Officer Course Student Text clearly illustrates the priority that C2 targeting received:

In the first hours of the air war...Coalition air attacks broke down Iraqi air defense C2 and radars. F-117s, AH-64s, cruise missiles and F-15Es penetrated the Iraqi radar system, attacking key C2 facilities. In the first five minutes, we attacked 20 air defense, [command, control and communications], electrical, [and] leadership nodes in Baghdad. By the end of [the] first 24 hours, nearly 48 such targets had been attacked.[13]

Aviators extensively used electronic warfare (EW) in support of the offensive air strikes. EW protected Coalition aircraft by deceiving, jamming and destroying (using anti-radiation missiles) the enemy's radar. The JFACC integrated PSYOP with physical destruction by dropping leaflets on Iraqi positions informing them that, unless they surrendered, a huge bomb would drop on their location the following day. As promised, IO planners followed up with a devastating air strike. This combination shattered Iraqi morale. Consequently, enemy soldiers surrendered by the hundreds and thousands. The air offensive is just one example of how IO unified under CENTCOM's concept of operations was employed successfully both offensively and defensively throughout the campaign.

The synergy produced by well-planned and integrated IO during Operation Desert Storm was, in large part, responsible for the astonishing Coalition victory. According to *Joint Doctrine for Command and Control Warfare*, "Successfully denying Saddam Hussein the ability to command and control his forces substantially reduced casualties on all sides and significantly reduced the time required to achieve Coalition objectives." [14] Synchronization and integration of IO at all levels were critical to achieving these decisive results. Contrasted with the Gulf War, Urgent Fury is a study of IO opportunities lost. Although successful, the invasion of Grenada could have been less costly if the elements that comprise IO were planned and coordinated under a unifying conceptual framework.

MARINE CORPS IO PLANNING AND EMPLOYMENT

Now that the utility of IO and the value of its high level integration has been established, an examination of how the Marine Corps plans and employs it is in order. Marine Corps Order 3430.5A, *Policy for Command and Control Warfare (C2W)*, gives the following guidance on Information Operations planning and employment. "C2W is a command responsibility. C2W will be integrated into the combined arms strategy under the staff cognizance of the G-3/S-3 to comply Marine Corps and joint policy."[15] The normal method in which commanders bring this vague guidance to life is through the joint IO planning model presented in *Joint Pub 3-13*. This method superimposes a IO cell on the 6 step Marine Corps Planning Process (MCPP). The G-3/S-3's IO officer leads the group. Included in this ad hoc organization are representatives from targeting, intelligence, civil affairs, communications, the OPSEC officer, the electronic warfare officer, the signals intelligence officer and supporting external agencies. The purpose of the cell is to integrate the elements of IO by representatives from each of the various associated disciplines into a successful plan. This working group is a step toward effective integration but improvements are necessary for IO to live up to its fullest potential as a force multiplier.

The IO cell is an important tool for coordinating the various IO elements. Alone however, it has some disadvantages that limit its effectiveness. According to the Center for Naval Analyses study, *C2W Doctrine and Procedural Issues*, the temporary and ad hoc nature of this organization "gives the impression that [IO] operations are part-time or secondary."[16] Burying the cell under the G-3/S-3 may result in IO being unintentionally neglected.[17] Confining Information Operations planning to just the IO staff limits the concept's overall effectiveness. Like maneuver warfare, IO is a "mind set" that the entire planning staff must adopt to achieve maximum effect.[18] This "universal IO consciousness" would be the ultimate level of integration. IO training is one step toward this objective. Building emphasis on IO into the planning process is another. Commanders can give Information Operations this important accentuation by including it as a concept in the Marine Corps Planning Process.

THE MARINE CORPS PLANNING PROCESS

Prior to course of action development, the commander provides his planning guidance. Although not required, this guidance may include concept statements. These concepts:

integrate all [warfighting] functions and activities in a logical framework. Because elements of each [warfighting] function interact with other functions, the concepts serve as an umbrella under which to organize functions contributing to the same cause. Using these components helps planners understand relationships between [warfighting] activities, and can contribute to asset allocation and resource management.[19]

There are presently three concepts: Maneuver, Fires and Support.[20] Other concepts may be included as required. Concepts were created, in part, to force planners to consider and integrate important aspects of military operations that have often been neglected in the past.

Under MCPP, IO guidance, if provided, is split between concepts. This arrangement fails to provide the proper integration and emphasis required to achieve the maximum benefit from IO. This split hinders development and employment of a cohesive plan. Effective Information Operations require a concept that emphasizes and integrates all aspects of IO within the commander's concept of operations.

RECOMMENDATIONS

I propose that IO be added as the Marine Corps Planning Process' fourth concept. I define this concept as "A vision of actions employed to attack an enemy's ability to command and control while protecting friendly ability to do the same." Compare the definition of Information Operations to that of a concept. The similarity is striking. Both seek to integrate different but complementary warfighting functions in order to achieve a common objective. Including IO in this manner is consistent with both the definition and intention of a concept.

The commander's IO concept would guide the efforts of the IO cell. It would serve as an icon to the

rest of the planners reminding them of IO's importance, guiding them to incorporate it into every aspect of the plan. [21] This arrangement would not only accentuate the significance of IO, it would also create an effective vehicle for coordinating IO activities across the Marine Corps' spectrum of warfare areas. [22] It provides the "mind set" required for our Marine Corps to achieve the maximum combat enhancing benefit that IO provides.

CONCLUSION

IO doctrine is still evolving and it will take some time for the most sensible method of planning and employment to unfold.[23] The final product needs to address the requirement to provide "coordination and precision of action-to an extent never before expected or possible in warfare."[24] We do not need to make a momentous doctrinal shift to "get there from here." The Marine Corps Planning Process places effective IO integration and employment within our grasp today. Creating a concept of IO would allow our Corps to reap the full benefits of this force multiplying capability.

^[1] Air Land Sea Application Center, "Information Warfare/Information Operations Study," (15 Dec. 1995): 20; hereafter cited as "IO/IW Study." [2] Dan Struble, Lieutenant Commander, USNR, "What is Command and Control Warfare?" *Naval War*

College Review vol. XLVIII, No. 3 (Summer 1995): 89.

^[3] Joint Publication 3-13, Joint Doctrine for Information Operations (IO) (U.S. Government Printing Office, 9 Oct. 1998) I-9.

^[4] Joint Pub 3-13.1, Joint Doctrine for Command and Control Warfare (C2W) (U.S. Government Printing Office, 7 Feb. 1996) I-5.

^[5] Marine Corps Doctrinal Publication 3-36, Information Operations (Coordinating Draft, 27 Feb 2001) 2.

- [6] MCWP 3-36 3.
- "IW/IO Study" 34.

 8 Robert D. Grymes, Major, USA, "Command and Control Warfare in Forced Entry Operations"
- Monograph, U.S. Army School of Advanced Military Studies, 19 May 1995: 38.

 [9] Grymes 18.

 [10] Grymes 22.

 [11] Joint Pub 3-13.1 V-8.

- 12 Ibid.
 13 Joint Command and Control Warfare Staff Officer Course Student Text, Armed Forces Staff College,

- April 1995: 15-5.

 [14] Joint Pub 3-13.1 V-8.

 [15] Marine Corps Order 3430.5A, Policy for Command and Control Warfare, 14 Mar. 1994: 4.

 [16] Mein-Sieng Wei, Center for Naval Analyses Research Memorandum 94-183, C2W Doctrine and Procedural Issues, Jan. 1995: 17.

- 17) Wei 19.
 18 "IW/IO Study," 29.
 19 "Marine Corps Planning Process: CCSC-97 Pocket Guide," Command and Control Systems School,
- [20] Marine Corps Warfighting Publication 5-1, Marine Corps Planning Process (U.S. Government Printing Office, 5 Jan. 2000) G-25.
 [21] Wei 17-19.
 [22] Ibid., 19.
 [23] Ibid., 16.

- 24 Struble 89.